

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

SPRINT COMMUNICATIONS COMPANY L.P.,)	
)	
Plaintiff,)	
)	
v.)	Case No.
)	
FRONTIER COMMUNICATIONS)	
CORPORATION,)	JURY TRIAL DEMANDED
)	
Defendant.)	

COMPLAINT

Plaintiff Sprint Communications Company L.P. complains as follows against Defendant Frontier Communications Corporation (“Frontier”).

PARTIES

1. Plaintiff Sprint Communications Company L.P. (“Sprint”) is a limited partnership organized and existing under the laws of the State of Delaware, with its principal place of business at 6200 Sprint Parkway, Overland Park, Kansas 66251.

2. On information and belief, Defendant Frontier is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at 401 Merritt 7, Norwalk, Connecticut 06851.

3. On information and belief, Frontier and/or one or more of its affiliates currently do and have in the past provided or participated in providing broadband and/or packet-based telephony products or services, including Frontier Digital Voice, Frontier Home Phone, Vantage Voice, Frontier AnyWare, Frontier Business Phone, and other related digital telephony services.

JURISDICTION

4. This is an action for patent infringement under the United States Patent Laws, 35 U.S.C. § 271, *et. seq.* This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. This Court has personal jurisdiction over Frontier because it is incorporated in the State of Delaware and therefore may be fairly regarded as at home in this Judicial District.

VENUE

6. Venue is proper in this Court pursuant to 28 U.S.C. § 1400(b). Frontier is incorporated in the State of Delaware and therefore resides in this Judicial District pursuant to 28 U.S.C. § 1400(b).

FACTUAL BACKGROUND

Sprint's Voice-over-Packet ("VoP") Technology

7. In 1993, Sprint's leading technology specialists and engineers were attempting to solve a very important problem affecting Sprint's ability to expand its network to support its rapidly growing customer base. At that time, virtually all voice traffic was carried over the Public Switched Telephone Network ("PSTN"), which utilized highly complex, extremely expensive switches and other well-established components to route this traffic. One solution to Sprint's problem—a solution that Sprint had used in the past—was to simply purchase additional switches from the legacy manufacturers and install those in its network. Adding switches, however, was extremely expensive and time consuming because Sprint's entire network of switches would have to be reprogrammed for each switch addition or upgrade. In addition, voice traffic on the PSTN was transported using inherently inefficient synchronous circuit-switching. A circuit was reserved for the entire length of a call on the PSTN, which wasted significant bandwidth during periods of time when no conversation was occurring. But legacy circuit-based

systems had long been widely used to carry voice communications, and there were no viable alternatives in the marketplace available to Sprint or other carriers at the time.

8. One of Sprint's talented technologists, Joe Christie, observed that data communications between computers were handled differently. Computers communicated with each other using "packets" of data. Packet communications, unlike the synchronous communications of the PSTN, could occur "asynchronously" where the sending and receiving points could send and receive out of synch with each other. This created an opportunity to realize substantial efficiencies by transmitting voice data packets only when there is voice data to send and refraining from wasting valuable bandwidth during periods of silence. In addition, unlike the complex and expensive switches used in the PSTN, data packets could be routed using fairly inexpensive components that could be made available from a number of competing vendors. Unfortunately, the two systems were not compatible with each other. Interfacing a circuit-switched system with a packet-based system in a geographically expansive telecommunications environment was not a reality, at least not before Joe Christie.

9. Joe Christie was an expert in two dissimilar technologies: packet-based networks and SS7 signaling (which was used by the PSTN to set up voice calls). Mr. Christie proposed a solution that would ultimately revolutionize the telecommunications industry. He devised a way to leverage the efficiencies of packet-based networks to make telephone calls to and from the PSTN. To do so, Mr. Christie invented a series of architectures, components, and processes that would allow the PSTN to "talk" to packet-based networks to set up and route telephone calls across these disparate networks in a seamless and transparent manner. These calls were highly efficient and substantially decreased the need for telephone companies to rely on expensive legacy PSTN equipment.

10. Mr. Christie's Voice-over-Packet ("VoP") technology reduced or eliminated the need for service providers to rely on conventional switches and switch-to-switch call processing. Instead, Mr. Christie conceived of centralizing network control by using a call processor to orchestrate calls over his new packet-based system. The call processor acted like the brains of the network, determining where a call needed to go and then enabling routing to its destination. This call processor extracted the intelligence of expensive and complicated legacy switches and placed this intelligence on functionally separate computer platforms. By extracting call control from the switch manufacturers, Mr. Christie allowed a host of competitors to provide processing equipment and to get into the business of telephony. This innovation would eventually increase competition, drive down the costs of telephony, and greatly improve efficiency.

11. When Mr. Christie presented his innovations to Sprint executives and Sprint technical management, they recognized the importance of his innovations. Mr. Christie's inventions had the potential to render obsolete major components within the PSTN and to break the grip that switch manufacturers held on carriers and service providers. Mr. Christie's innovations could dramatically alter the way telephone calls were made and change the landscape of the relative strength and leverage of the players in the industry. They represented a sea change in telephony, and Mr. Christie's colleagues at Sprint, including upper-level executives, realized it. Sprint promptly assigned a patent agent to shadow Mr. Christie to learn as much as possible about the various aspects of his new systems and to seek patent protection. Sprint also assigned a team of some of Sprint's most talented engineers to work with Mr. Christie and to help develop concepts into tangible platforms. Due to the highly sensitive nature of the project, the team was sequestered in a Kansas City facility and instructed to maintain the project in the strictest of confidence. Few people in Sprint knew of this project at the time.

12. Joe Christie died unexpectedly in his home in February of 1996. Mr. Christie did not live to see his innovations deployed into a commercial platform. But Mr. Christie's revolutionary inventions have an enduring legacy. Mr. Christie's inventions and the related innovations made by people working with Mr. Christie have resulted in a VoP patent portfolio of over 120 issued United States Patents. Unfortunately, many companies in the industry, including Frontier, have realized the great value in this technology and have misappropriated it without Sprint's permission. It is because of this unauthorized use that Sprint has taken efforts to enforce this patent portfolio against others in the industry in the past and is now enforcing its patents in this case.

Sprint's Enforcement Efforts and Licenses

13. In 2007, in the matter styled *Sprint Communications Co. L.P. v. Vonage Holdings Corp. et al.*, Case No. 05-2433-JWL (D. Kan.), a Kansas jury found that Vonage Holdings Corp. and Vonage America, Inc. ("Vonage") had infringed six patents contained in this portfolio, including patents that are at issue in this case, found that the six patents were valid, assessed a five percent (5 %) reasonable royalty, and awarded Sprint \$69.5 million in damages. Following the verdict, Vonage entered a settlement agreement with Sprint whereby Vonage paid Sprint \$80 million for a license to Sprint's VoP portfolio. Previously, in that same matter, *tglo.com, Inc.* (formerly known as VoiceGlo Holdings, Inc.) and *Theglobe.com Inc.* ("VoiceGlo") had entered a settlement agreement in which VoiceGlo licensed Sprint's VoP patents.

14. In 2008, Sprint again sued to enforce patents from its VoP portfolio in additional lawsuits against companies engaging in the unauthorized use of Sprint's VoP technology: *Sprint Communications Co. L.P. v. Paetec Holding Corp. et al.*, Case No. 08-cv-2044-JWL/GLR (D. Kan.), *Sprint Communications Co. L.P. v. Broadvox Holdings, LLC et al.*, Case No. 08-cv-2045-JWL/DJW (D. Kan.); *Sprint Communications Co. L.P. v. Big River Telephone Co., LLC*, Case

No. 08-cv-2046-JWL/DJW (D. Kan.), and *Sprint Communications Co. L.P. v. Nuvox, Inc. et al.*, Case No. 08-cv-2047-JWL/JPO (D. Kan.). By late 2009, Sprint had entered settlement agreements resolving these lawsuits and, as a result, a number of additional companies licensed patents from Sprint's VoP portfolio.

15. During this same time frame, Sprint continued to derive substantial revenues from providing numerous cable companies with a network backbone to carry voice traffic to support those companies' digital telephone offerings, which use packet networks coupled with the PSTN.

16. In 2011, Sprint again sued to enforce patents from its VoP portfolio for the unauthorized use of its patented technology: *Sprint Communications Co. L.P. v. Cox Communications, Inc., et al.*, Case No. 11-cv-2683-JWL (D. Kan.), *Sprint Communications Co. L.P. v. Comcast Cable Communications, LLC et al.*, Case No. 11-cv-2684-JWL (D. Kan.), *Sprint Communications Co. L.P. v. Cable One, Inc.*, Case No. 11-cv-2685-JWL (D. Kan.), and *Sprint Communications Co. L.P. v. Time Warner Cable Inc., et al.*, Case No. 11-cv-2686-JWL (D. Kan.). In 2016, Sprint entered into a settlement agreement resolving the Cable One lawsuit. In March 2017, a Kansas jury found that Time Warner Cable had willfully infringed five patents in this portfolio, including patents that are at-issue in this case, awarding Sprint \$139.8 million in damages. Subsequently, in 2017, Sprint entered into settlement agreements resolving the Comcast lawsuit and the Cox lawsuit.

The Patents-In-Suit

17. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,343,084 ("the '084 Patent") entitled "Broadband Telecommunications System," which duly and legally issued in the name of Joseph Michael Christie on January 29, 2002. A copy of the '084 Patent is attached to the Complaint as Exhibit A.

18. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,633,561 (“the ‘3,561 Patent”) entitled “Method, System and Apparatus for Telecommunications Control,” which duly and legally issued in the name of Joseph Michael Christie on October 14, 2003. A copy of the ‘3,561 Patent is attached to the Complaint as Exhibit B.

19. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,463,052 (“the ‘052 Patent”) entitled “Method, System and Apparatus for Telecommunications Control,” which duly and legally issued in the name of Joseph Michael Christie on October 8, 2002. A copy of the ‘052 Patent is attached to the Complaint as Exhibit C.

20. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,452,932 (“the ‘932 Patent”) entitled “Method, System and Apparatus for Telecommunications Control,” which duly and legally issued in the name of Joseph Michael Christie on September 17, 2002. A copy of the ‘932 Patent is attached to the Complaint as Exhibit D.

21. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,473,429 (“the ‘429 Patent”) entitled “Broadband Telecommunications System,” which duly and legally issued in the name of Joseph Michael Christie on October 29, 2002. A copy of the ‘429 Patent is attached to the Complaint as Exhibit E.

22. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,298,064 (“the ‘064 Patent”) entitled “Broadband Telecommunications System,” which duly and legally issued in the name of Joseph Michael Christie on October 2, 2001. A copy of the ‘064 Patent is attached to the Complaint as Exhibit F.

23. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,330,224 (“the ‘224 Patent”) entitled “System and Method for Providing Enhanced Services for a Telecommunication Call,” which duly and legally issued in the names of Joseph Michael Christie, Joseph S. Christie, and Tracy Lee Nelson on December 11, 2001. A copy of the ‘224 Patent is attached to the Complaint as Exhibit G.

24. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,697,340 (“the ‘340 Patent”) entitled “System and Method for Providing Enhanced Services for a Telecommunication Call,” which duly and legally issued in the names of Joseph Michael Christie, Joseph S. Christie, Jean M. Christie, and Tracy Lee Nelson on February 24, 2004. A copy of the ‘340 Patent is attached to the Complaint as Exhibit H.

25. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 7,286,561 (“the ‘6,561 Patent”) entitled “Method System and Apparatus for Telecommunications Control,” which duly and legally issued in the name of Joseph Michael Christie on October 23, 2007. A copy of the ‘6,561 Patent is attached to the Complaint as Exhibit I.

26. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 7,505,454 (“the ‘454 Patent”) entitled “Method, System and Apparatus for Telecommunications Control,” which duly and legally issued in the name of Joseph Michael Christie on March 17, 2009. A copy of the ‘454 Patent is attached to the Complaint as Exhibit J.

27. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 7,327,728 (“the ‘728 Patent”) entitled “Broadband Telecommunications System,” which duly and legally issued in the name of Joseph Michael Christie, Albert D. Duree,

Michael Joseph Gardner, William Lyle Wiley, Manu Chand Bahl and Daniel Charles Sbisá on February 5, 2008. A copy of the '728 Patent is attached to the Complaint as Exhibit K.

28. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 7,324,534 ("the '534 Patent") entitled "Broadband Telecommunications System Interface," which duly and legally issued in the name of Joseph Michael Christie, Michael Joseph Gardner, Tracy Lee Nelson, William Lyle Wiley and Albert Daniel Duree on January 29, 2008. A copy of the '534 Patent is attached to the Complaint as Exhibit L.

29. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 7,693,131 ("the '131 Patent") entitled "Telecommunications System to Provide Analog Telephony Communications Over a Packet Connection," which duly and legally issued in the name of Martin Joseph Kaplan, Frank Anthony DeNap, John Arndt Strand, III, William Lee Edwards, Bryan Lee Gorman, Murat Bog, Michael Thomas Swink and Harold Wayne Johnson on April 6, 2010. A copy of the '131 Patent is attached to the Complaint as Exhibit M.

30. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,563,918 ("the '918 Patent") entitled "Telecommunications System Architecture for Connecting a Call," which duly and legally issued in the name of Tracy Lee Nelson, William Lyle Wiley, Royal Dean Howell, Michael Joseph Gardner and Albert Daniel DuRee on May 13, 2003. A copy of the '918 Patent is attached to the Complaint as Exhibit N.

31. Plaintiff Sprint is the owner by assignment of all right, title, and interest in and to United States Patent No. 6,999,463 ("the '463 Patent") entitled "Number Portability In A Communications System," which duly and legally issued in the name of Joseph Michael Christie, Joseph S. Christie, Jean M. Christie, Michael Joseph Gardner, Albert Daniel Duree,

William Lyle Wiley, and Tracy Lee Nelson on February 14, 2006. A copy of the '463 Patent is attached to the Complaint as Exhibit O.

32. The patents identified in paragraphs 17–31 and attached as Exhibits A–O are herein collectively referred to as “Sprint’s Patents” or the “Asserted Patents.”

Frontier

33. Upon information and belief, Frontier is one of the largest providers of telecommunications services in the United States, delivering broadband, video, voice, and other services and products to residential and business customers. *See* Frontier’s 2016 Annual Report (Form 10-K) at p. 2, <http://investor.frontier.com/annual-report-proxy> (select “2016 Annual Report & Proxy”) (last visited Jan. 26, 2018). Upon information and belief, Frontier has approximately 5.4 million customers. *See id.*

34. Upon information and belief, Frontier has made, used, offered to sell, and/or sold, and continues to make, use, offer to sell, and/or sell broadband and/or packet-based telephony products or services, including, but not limited to, Frontier Digital Voice, Vantage Voice, Frontier AnyWare, Frontier Home Phone, Frontier Business Phone, and other related telephony services (collectively, “the Accused Products and Services”), without Sprint’s permission.

The Accused Products and Services

35. Frontier has made, used, offered to sell, and/or sold and continues to make, use, sell, and/or offer to sell the Accused Products and Services within the United States. On information and belief, Frontier’s Accused Products and Services have been implemented and provide functionality through equipment that complies with certain protocols, including Session Initiation Protocol (“SIP”) and Media Gateway Control Protocol (“MGCP”). These protocols allow voice data to be transmitted between Frontier’s customers over a packet communication to and from the PSTN. On information and belief, the Accused Products and Services accomplish

communication control through a processing system that processes signaling to select network characteristics and signals network elements based on the selections.

36. In particular, on information and belief and as discussed above and throughout, Frontier provided and continues to provide VoIP telephony services that are capable of placing calls to, and receiving calls from, the PSTN. These services were and are provided through devices operating on Frontier's network, including network elements that are dedicated to call control and set-up (e.g., softswitches), and elements for interworking between packet-based/broadband formats and time-based/narrowband formats (e.g., media gateways). In particular, Frontier provided and continues to provide to its VoIP subscribers, a packet-based, broadband connection between customer premises equipment (e.g., Optical Network Terminals or other VoIP-compatible equipment) ("CPE") and one or more softswitches for communicating call signaling.

37. On information and belief, Frontier provides a data-based VoIP system supported by "VoIP switches" and other equipment that integrates with IP Multimedia Subsystems (IMS) standards.¹ On information and belief, Frontier's voice services make use of one or more softswitches (e.g., devices from Tekelec, ADTRAN, Metaswitch, Avaya, and potentially others) for performing call processing functions, including routing through and control of one or more media gateways (e.g., Tekelec 8000 and/or others) having Digital Signal Processing agents for interworking voice user communications between TDM and IP formats.²

¹ See Frontier's 2016 Annual Report (Form 10-K) at p. 4, <http://investor.frontier.com/annual-report-proxy> (select "2016 Annual Report & Proxy") (last visited Jan. 26, 2018).

² See, e.g., Tekelec Switching Portfolio Powers Frontier's New One-Number Service, Frontier1, Business Wire (Feb. 27, 2007), <https://www.businesswire.com/news/home/20070227005104/en/Tekelec-Switching-Portfolio-Powers-Frontiers-New-One-Number> ("The Tekelec 9000 platform is an IMS-enabled Media Gateway Control Function (MGCF) and Media Gateway (MGW) for connectivity to the public switched telephone network (PSTN) as well as native Class 4 and 5 services for traditional switching applications. The T9000 supports

38. On further information and belief, Frontier makes use of media gateways and softswitches that comply with SIP, H.323, MGCP, and/or H.248 protocols, and practices those protocols (or their equivalents).³

—Frontier’s Inbound Calls—
A Call From The PSTN To A VoIP Subscriber Through A Media Gateway⁴

39. On information and belief, during an Inbound Call, a softswitch used by or on behalf of Frontier,⁵ receives an SS7 Initial Address Message (“IAM”) from a PSTN signaling point. The SS7 message is received over A- or D-links in SS7 or SIGTRAN format. The received SS7 IAM message includes, amongst other things, a Destination Point Code (“DPC”), an Origination Point Code (“OPC”), a Circuit Identification Code (“CIC”), the calling party’s

both time division multiplexing (TDM) and IP architectures as well as distributed gateway functionality.”); Tekelec 9000 Distributed Switching Solution, Tekelec, (captured Dec. 31, 2005) (last visited Apr. 9, 2018), https://web.archive.org/web/20051230210914/http://www.tekelec.com:80/products/prod_detail.asp?id=26&catid=7; Tekelec 6000 VoIP Application Server, Tekelec, (captured Dec. 30, 2005) (last visited Apr. 9, 2018), https://web.archive.org/web/20051231053104/http://www.tekelec.com:80/products/prod_detail.asp?id=10; *see also* <https://www.devconnectprogram.com/fileMedia/download/4339a6b2-fcd3-4fd8-bb17-7e6dc50f455e>.

³ *See, e.g.*, Tekelec Switching Portfolio Powers Frontier’s New One-Number Service, Frontier1, Business Wire (Feb. 27, 2007), <https://www.businesswire.com/news/home/20070227005104/en/Tekelec-Switching-Portfolio-Powers-Frontiers-New-One-Number>; <https://www.businesswire.com/news/home/20070416005541/en/Frontier-Approves-ADTRAN-Total-Access-5000-Multi-Service>; <https://tools.ietf.org/html/draft-huitema-megaco-mgcp-flows-01>.

⁴ While the call flows in the paragraphs 39-61 are in the present tense, on information and belief, Frontier performed these call flows in the past, including during and prior to 2014.

⁵ For brevity, Sprint refers to a “softswitch.” Frontier may include various types of softswitches (or equivalents), or connect to components operated third parties on Frontier’s behalf, such as a Media Gateway Controller (“MGC”), a Signaling Gateway (“SG”), and/or a Call Agent (“CA”) or IP Multimedia Subsystem (“IMS”) equivalents, that perform analogous functions. In particular, IMS implementations include Call Session Control Function (“CSCF”), which perform analogous functions to Call Management Servers and Call Agents; Media Gateway Controller Function (“MGCF”), which perform analogous functions to Media Gateway Controllers; and Signaling Gateways (“SGW”), which perform analogous functions to Signaling Gateways. *See, e.g.*, 3rd Generation Partnership Project Technical Specification Group Services and Systems Aspects IP Multimedia Subsystem (IMS) Stage 2 (Release 7) at p. 18, http://www.3gpp.org/ftp/Specs/archive/23_series/23.228/23228-700.zip; Tekelec Switching Portfolio Powers Frontier’s New One-Number Service, Frontier1, Business Wire (February 27, 2007), <https://www.businesswire.com/news/home/20070227005104/en/Tekelec-Switching-Portfolio-Powers-Frontiers-New-One-Number>.

telephone number, the called party's telephone number (i.e., the dialed telephone number), and, if applicable, a Location Routing Number ("LRN") associated with the called party's telephone number.

40. On further information and belief, the Frontier softswitch processes information in the SS7 IAM message to make selections with respect to establishing and routing the call. For example, on information and belief, the Frontier softswitch uses, amongst other things, the OPC and CIC information included in the SS7 IAM to identify a Media Gateway ("MG") that is used to interwork bearer traffic (i.e., speech or voice on the call) between TDM and packet-based formats. Likewise, the Frontier softswitch also uses, amongst other things, the telephone number and/or LRN included in the SS7 IAM to identify the called party, including an IP address associated with the called party's CPE. These selections, as well as others, are based on call routing data stored within the Frontier softswitch in call routing database tables that are populated by one or more Element Management Systems ("EMS").

41. On information and belief, during an Inbound Call, a Frontier softswitch sends a CRCX (create connection message) to the MG instructing the MG to create a session in inactive mode. On information and belief, an MG operated by or on behalf of Frontier creates the session in inactive mode and responds to the CRCX message with an acknowledgment message, which includes the MG's Session Description Protocol ("SDP") profile information. On information and belief, the SDP profile includes, among other information, the IP address and port of the MG to which voice information will be sent using Real-time Protocol ("RTP") voice packets.

42. On information and belief, during an Inbound Call, a Frontier softswitch sends a CRCX message to the CPE instructing the CPE to create a session. On information and belief, the CRCX includes the MG's IP address and port information. On information and belief, the

CPE sends an ACK (acknowledgement message) in response to the CRCX to the Frontier softswitch that includes the CPE's own SDP profile which includes, among other information, the CPE's IP address and port information. The IP address included in the ACK from the CPE to the Frontier softswitch is the same IP address used by the softswitch to send the CRCX message to the CPE instructing the CPE to create a session.

43. On information and belief, during an Inbound Call, when the called party answers the call, the CPE sends a NTFY (notify message) indicating an off-hook event to the Frontier softswitch. The Frontier softswitch sends an MDCX (modify connection message) to the MG instructing the MG to modify the inactive session to become an active session to exchange two-way bearer traffic (i.e., speech or voice traffic) for the call. The MDCX includes the IP address of the CPE identified by the Frontier softswitch and used to communicate the above-described CRCX message to the CPE. The MDCX also includes the port information provided by the CPE in the ACK to the Frontier softswitch.

44. On information and belief, during an Inbound Call, voice information between the MG interfacing with the PSTN is transmitted from the MG to the CPE (and *vice versa*) using RTP. On further information and belief, the MG receives bearer audio (i.e., voice or speech audio) from the PSTN and places portions of the digital audio into the payloads of RTP voice packets. The bearer audio (i.e., voice or speech audio) is received by the MG from the PSTN over a DS0 connection corresponding to the OPC, DPC, and CIC values included in the SS7 IAM. The bearer audio (i.e., voice or speech audio) is received by the MG at a data rate of 64 kilobits per second, and is not packetized.

45. The MG creates voice packets containing the bearer audio (i.e., voice or speech audio) received over the DS0 connection according to specified packetization period (e.g., 10

milliseconds, 20 milliseconds) using a specified encoding scheme, such as G.711 for Pulse Code Modulation (“PCM”). As a result, on information and belief, all RTP voice packets created for any particular Inbound Call will be of an identical size (e.g., 210 bytes).

46. While creating the RTP voice packets, on information and belief, the MG includes the CPE’s IP address received from the Frontier softswitch in the destination field of the RTP voice packets’ IP headers. On information and belief, the MG then sends the RTP voice packet to Frontier’s IP network to eventually reach the called party’s CPE. The RTP voice packets between the MG and the CPE are not transmitted according to a shared timing relationship, such as Stratum Level clock that ensures packets are delivered synchronously.

47. On further information and belief, the called party’s CPE receives the RTP voice packets transmitted by the MG. The CPE removes the bearer traffic (i.e., voice or speech audio) from the RTP packets, transcodes the bearer traffic from digital to analog, and transfers the analog audio in non-packet format to an analog telephone connected to the CPE.

48. On information and belief, during an Inbound Call, a CPE similarly receives analog voice from the analog telephone connected to the CPE, transcodes the voice into digital format, and places portions of the digital voice into the payloads of RTP voice packets. On information and belief, the CPE puts the MG’s IP address received from the Frontier softswitch in the destination address field of the RTP voice packets’ IP headers. On information and belief, the CPE then sends the RTP voice packet to Frontier’s IP network to eventually reach the MG.

A Call From The PSTN To Voicemail Through A Media Gateway

49. On information and belief, during an Inbound Call to Voicemail, a call from the PSTN is attempted to be connected to a called party’s CPE as detailed above (*see* ¶¶ 39-42). If the called party does not answer the call, either because the called party is already connected to a different call (“call forward, busy”) or because the called party is not available (“call forward, no

answer”), the softswitch forwards the call to voicemail.

50. For example, on information and belief, in a “call forward, no answer” scenario, a Frontier softswitch communicates with the CPE to direct the CPE to ring the called party’s phone. If a predetermined number of rings or a predetermined amount of time has elapsed before the called party answers the call, a call forward condition is triggered in the softswitch. If the called party has the call forwarding to voicemail feature enabled, the softswitch performs additional processing to forward the call to voicemail.

51. On information and belief, the softswitch uses internal routing tables and data associated with the called party to determine where the call should be forwarded. On information and belief, upon determining that a “call forward, no answer” scenario is occurring, the call can be forwarded to a voicemail platform associated with a trunk group. On information and belief, the softswitch generates a SIP message directed toward the voicemail platform, the SIP message containing, among other data, the dialed digits of the called party. The voicemail platform responds to the softswitch with a 200 OK message which includes the IP address and port information of the voicemail platform. The softswitch updates the MG with the IP address and port number of the voicemail platform.

52. On information and belief, after the MG receives updated IP address and port information of the voicemail platform, a call can be established between the voicemail platform and the PSTN calling party via the MG in a manner that is functionally similar to a call connected to a CPE as detailed above (*see* ¶¶ 43-47).

—Frontier’s Outbound Calls—
A Call From A VoIP Subscriber To The PSTN Through A Media Gateway

53. On information and belief, during an Outbound Call, when an analog telephone connected to a CPE is picked up, the CPE sends a NTFY indicating an off-hook event to a

Frontier softswitch. On information and belief, the Frontier softswitch sends an ACK in response to the NTFY and a RQNT (notification request message) instructing the CPE to provide a dial-tone and notify the softswitch of dialed digits. On information and belief, after the calling party has dialed digits, the CPE sends a NTFY to the softswitch with the dialed digit information.

54. On information and belief, the Frontier softswitch processes information included in the NTFY message, including the dialed digits, according to a defined dial plan, such as a dial plan associated with the calling subscriber and/or least cost routing procedures. The Frontier softswitch processes the dialed digits using call routing data stored in a relational call routing database in the softswitch, which, on information and belief, is populated with data from an EMS.

55. On information and belief, during an Outbound Call involving a dialed number that has been ported, Frontier's softswitch sends an SS7 IAM to the PSTN with the LRN returned in response to a Local Number Portability ("LNP") query as a called party number, which includes the actual dialed number in the IAM's Generic Address Parameter ("GAP") field. If the number has not been ported, the dialed digits are used for further call processing by the Frontier softswitch. In either scenario, the Frontier softswitch will identify a trunk to connect the call to the PSTN using the dialed digits and/or an LRN. The selected trunk connects a Frontier MG, on one side, and a switch on the PSTN, on the other, and has an associated CIC value uniquely identifying the selected trunk between the MG and PSTN switch.

56. Once a trunk is selected, the Frontier softswitch identifies the MG associated with one end of the selected trunk using call routing data stored in relational call routing database tables in the Frontier softswitch. Likewise, on information and belief, the Frontier softswitch identifies a signaling Point Code for the PSTN switch on the other side of the selected trunk-

based call routing data stored in relational call routing database tables in the Frontier softswitch.

57. Using the DPC of the PSTN switch, on information and belief, the Frontier softswitch will send an SS7 IAM message to the PSTN switch associated with the selected Point Code. In particular, the SS7 IAM includes the PSTN switch Point Code in the Destination Point Code field of the SS7 IAM message, along with the Point Code (OPC) of the Frontier softswitch, the CIC associated with the trunk, and the dialed number and/or LRN. The SS7 IAM is sent over A- or D-links in native SS7 or SIGTRAN formats.

58. On information and belief, during an Outbound Call, Frontier's softswitch will send a CRCX instructing the CPE to create a session in inactive mode. On information and belief, in response to the CRCX, the CPE sends an ACK to the softswitch and includes its SDP profile in the ACK. On information and belief, the CPE's SDP profile contains, among other information, the CPE's IP address and port information.

59. On information and belief, during an Outbound Call, Frontier's softswitch also sends a CRCX to the selected MG associated with the identified trunk, including the CPE's SDP profile, instructing the MG to create a session. On information and belief, in response to the CRCX the MG creates a session and sends an ACK, which includes the MG's own SDP profile. On information and belief, the MG's SDP profile includes, among other information, the MG's IP address and port number to which the CPE should send RTP voice packets.

60. On information and belief, during an Outbound Call, after the PSTN called party answers the phone, voice information between the calling party's CPE and the MG interfacing with the PSTN is then transmitted from the CPE to the MG (and *vice versa*) using RTP, as generally discussed above (*see* ¶¶ 43–48). On information and belief, the CPE receives analog audio from the connected telephone, transcodes it to digital format, and places portions of the

digital audio into the payloads of RTP voice packets. On information and belief, the CPE puts the MG's IP address, which it received from the MG, in the destination address field of the RTP voice packets' IP headers. On information and belief, the CPE then sends the RTP voice packet to Frontier's IP network where it reaches the MG.

61. On information and belief, during an Outbound Call, the MG similarly receives analog audio from the PSTN and places portions of the digital audio into the payloads of RTP voice packets, as detailed above (*see* ¶¶ 43–48). On information and belief, the MG puts the CPE's IP address, which it received from the CPE, in the destination address field of the RTP voice packets' IP headers. On information and belief, the MG then sends the RTP voice packet to Frontier's IP network, where it reaches the called party's CPE.

COUNT 1: PATENT INFRINGEMENT
Infringement of the '084 Patent

62. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–61 above.

63. Upon information and belief, Frontier directly infringed, either individually or jointly, the '084 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, that infringed the '084 Patent. These broadband and/or packet-based telephony products and/or services were capable of receiving and did receive telephone calls originating from a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '084 Patent under 35 U.S.C. § 271(a).

64. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating an interworking unit to handle a plurality of calls. *See, e.g.,* ¶¶ 39–61, *supra*. On further

information and belief, Frontier received messages into the interworking unit on a call-by-call basis where the messages indicated one of a plurality of synchronous connections and a corresponding one of a plurality of identifiers. *See, e.g.*, ¶ 41, *supra*. On further information and belief, Frontier received user communications for the calls from the synchronous connections indicated in the messages into the interworking unit. *See, e.g.*, ¶¶ 44-48, *supra*. On further information and belief, Frontier, in response to the messages, converted the user communications from the synchronous connections into asynchronous communications including the corresponding identifiers. *See, e.g., id.* On further information and belief, Frontier, transferred the asynchronous communications for subsequent routing based on the identifiers. *See, e.g., id.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

65. As a direct and proximate consequence of Frontier's infringement of the '084 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 2: PATENT INFRINGEMENT
Infringement of the '3,561 Patent

66. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–65 above.

67. Upon information and belief, Frontier directly, either individually or jointly, infringed the '3,561 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, that infringed the '3,561 Patent. These broadband and/or packet-based telephony products and/or services were capable of placing and did place telephone calls that terminated on a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claims 1 and 24 of the '3,561 Patent under 35 U.S.C. § 271(a).

68. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a processing system to control a packet communication system for a user communication. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, Frontier received a signaling message for the user communication from a narrowband communication system into the processing system. *See, e.g.*, ¶ 39, *supra*. On further information and belief, Frontier processed the signaling message to select a network code that identified a network element to provide egress from the packet communication system for the user communication. *See, e.g.*, ¶¶ 39-40, *supra*. On further information and belief, Frontier generated a control message indicating the network code. *See, e.g.*, ¶¶ 41-42, *supra*. On further information and belief, Frontier transferred the control message from the processing system to the packet communication system. *See, e.g., id.* On further information and belief, Frontier received the user communication in the packet communication system and used the network code to route the user communication through the packet communication system to the network element. *See, e.g.*, ¶¶ 44-48, *supra*. On further information and belief, Frontier transferred the user communication from the network element to provide egress from the packet communication system. *See, e.g., id.*

69. Furthermore, on information and belief, Frontier implemented a method of operating a processing system to control a packet communication system for a user communication. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier selected a network code that identified a network element to provide egress for the user communication from the packet communication system to a narrowband communication system. *See, e.g.*, ¶¶ 53-59, *supra*. On further information and belief, Frontier generated a control message indicating the network code and transferred the control message from the processing system to the packet

communication system. *See, e.g.*, ¶ 59, *supra*. On further information and belief, Frontier generated a signaling message for the user communication and transferred the signaling message from the processing system to the narrowband communication system. *See, e.g.*, ¶¶ 55-59, *supra*. On further information and belief, Frontier received the user communication in the packet communication system and used the network code to route the user communication through the packet communication system to the network element. *See, e.g.*, ¶¶ 60-61, *supra*. On further information and belief, Frontier transferred the user communication from the network element to the narrowband communication system to provide egress from the packet communication system. *See, e.g.*, ¶¶ 60-61, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

70. As a direct and proximate consequence of Frontier's infringement of the '3,561 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 3: PATENT INFRINGEMENT **Infringement of the '052 Patent**

71. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–68 above.

72. Upon information and belief, Frontier directly, either individually or jointly, infringed the '052 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '052 Patent. These broadband and/or packet-based telephony products and/or services were capable of receiving and did receive telephone calls originating from a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '052 Patent under 35 U.S.C. § 271(a).

73. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of transferring a user communication to a packet communication system. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, Frontier received the user communication into a device. *See, e.g.*, ¶¶ 44-48, *supra*. On further information and belief, Frontier received signaling formatted for a narrowband system into a processing system. *See, e.g.*, ¶¶ 39-40, *supra*. On further information and belief, Frontier processed, in the processing system, the signaling to select a network code that identified a network element to provide egress for the user communication from the packet communication system. *See, e.g., id.* On further information and belief, Frontier transferred an instruction indicating the network code from the processing system to the device. *See, e.g.*, ¶¶ 41-42, *supra*. On further information and belief, Frontier transferred a packet including the network code and the user communication from the device to the packet communication system in response to the instruction. *See, e.g.*, ¶¶ 44-48, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

74. As a direct and proximate consequence of Frontier's infringement of the '052 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 4: PATENT INFRINGEMENT **Infringement of the '932 Patent**

75. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–73 above.

76. Upon information and belief, Frontier directly, either individually or jointly, infringed the '932 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and

other related telephony services, that infringed the ‘932 Patent. These broadband and/or packet-based telephony products and/or services were capable of placing and did place telephone calls that terminated on a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the ‘932 Patent under 35 U.S.C. § 271(a).

77. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of handling a call having a first message and communications. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier operated a processing system external to narrowband switches that received and processed the first message to select one of the narrowband switches. *See, e.g.*, ¶¶ 53-57, *supra*. On further information and belief, Frontier generated a second message in the processing system based on the selected narrowband switch and transmitted the message from the processing system. *See, e.g.*, ¶¶ 53-59, *supra*. On further information and belief, Frontier received the second message and communications and transferred the communications to the narrowband switch in response to the second message. *See, e.g.*, ¶¶ 60-61, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

78. As a direct and proximate consequence of Frontier’s infringement of the ‘932 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 5: PATENT INFRINGEMENT
Infringement of the ‘429 Patent

79. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–77 above.

80. Upon information and belief, Frontier directly, either individually or jointly, infringed the ‘429 Patent by making, using, selling, and offering for sale broadband and/or

packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '429 Patent. These broadband and/or packet-based telephony products and/or services were capable of receiving and did receive telephone calls originating from a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '429 Patent under 35 U.S.C. § 271(a).

81. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a communication method for transferring telecommunication signals for a call. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, Frontier received information associated with a user communication into a processing system. *See, e.g.*, ¶¶ 39-40, *supra*. On further information and belief, Frontier processed the information in the processing system to select an identifier. *See, e.g., id.* On further information and belief, Frontier generated a message containing the identifier. *See, e.g.*, ¶¶ 40-42, *supra*. On further information and belief, Frontier transmitted the message from the processing system. *See, e.g., id.* On further information and belief, Frontier received the message into an interworking unit. *See, e.g., id.* On further information and belief, Frontier received the user communication into the interworking unit from a DS0 connection. *See, e.g.*, ¶¶ 44-46, *supra*. On further information and belief, Frontier, in the interworking unit, converted the user communication into an asynchronous communication with the identifier in a header in response to the message. *See, e.g., id.* On further information and belief, Frontier transferred the asynchronous communication from the interworking unit. *See, e.g., id.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

82. As a direct and proximate consequence of Frontier's infringement of the '429 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 6: PATENT INFRINGEMENT
Infringement of the '064 Patent

83. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1-81 above.

84. Upon information and belief, Frontier directly, either individually or jointly, infringed the '064 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '064 Patent. These broadband and/or packet-based telephony products and/or services were capable of placing and did place telephone calls that terminate on a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '064 Patent under 35 U.S.C. § 271(a).

85. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method for a call. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier received set-up signaling associated with the call into a processing system. *See, e.g.*, ¶ 53, *supra*. On further information and belief, Frontier processed the set-up signaling in the processing system to select a DS0 connection. *See, e.g.*, ¶¶ 53-57, *supra*. On further information and belief, Frontier generated a message identifying the DS0 connection. *See, e.g., id.* On further information and belief, Frontier transmitted the message from the processing system. *See, e.g.*, ¶¶ 56-59, *supra*. On further information and belief, Frontier received the message and an asynchronous communication associated with the call into an interworking unit. *See, e.g.*, ¶¶ 60-61, *supra*. On further

information and belief, Frontier, in the interworking unit, converted the asynchronous communication into a user communication. *See, e.g., id.* On further information and belief, Frontier transferred the user communication from the interworking unit to the DS0 connection in response to the message. *See, e.g., id.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

86. As a direct and proximate consequence of Frontier's infringement of the '064 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 7: PATENT INFRINGEMENT
Infringement of the '224 Patent

87. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–85 above.

88. Upon information and belief, Frontier directly, either individually or jointly, infringed the '224 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '224 Patent. These broadband and/or packet-based telephony products and/or services were capable of providing and did provide enhanced services in a manner that directly infringed at least claim 1 of the '224 Patent under 35 U.S.C. § 271(a).

89. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method for operating a communication system. *See, e.g., ¶¶ 49-52, supra.* On further information and belief, Frontier received information into a processing system wherein the information is related to a user communication in a first communication format. *See, e.g., ¶¶ 39-40, 49, supra.* On further

information and belief, Frontier, in the processing system, selected a service and a service node to provide the service based on the information. *See, e.g.*, ¶¶ 49-52, *supra*. On further information and belief, Frontier, in the processing system, generated and transmitted a first message from the processing system. *See, e.g., id.* On further information and belief, Frontier, in the processing system, generated and transmitted a second message from the processing system to the service node wherein the second message indicated the selected service and a user. *See, e.g., id.* On further information and belief, Frontier received the user communication in the first communication format and the first message into an interworking unit. *See, e.g., id.* On further information and belief, Frontier, in the interworking unit, converted the user communication from the first communication format to a second communication format and transmitted the user communication in the second communication format to the service node in response to the first message. *See, e.g., id.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

90. As a direct and proximate consequence of Frontier's infringement of the '224 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 8: PATENT INFRINGEMENT
Infringement of the '340 Patent

91. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–89 above.

92. Upon information and belief, Frontier directly, either individually or jointly, infringed the '340 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '340 Patent. These broadband and/or packet-

based telephony products and/or services were capable of providing and did provide enhanced services in a manner that directly infringed at least claim 11 of the '340 Patent under 35 U.S.C. § 271(a).

93. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a communication system. *See, e.g.*, ¶¶ 39-52, *supra*. On further information and belief, Frontier, in a signaling processor, received and processed Signaling System Seven (SS7) signaling for a call, and in response, generated and transferred control messaging indicating identifiers that are used for routing. *See, e.g.*, ¶¶ 39-40, 49. On further information and belief, Frontier, in a service platform system, received the control messaging, and in response, exchanged communications that included the identifiers to interact with a caller to provide a service. *See, e.g.*, ¶¶ 49-52. On further information and belief, each of these steps was performed by or on behalf of Frontier.

94. As a direct and proximate consequence of Frontier's infringement of the '340 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 9: PATENT INFRINGEMENT
Infringement of the '6,561 Patent

95. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–93 above.

96. Upon information and belief, Frontier directly, either individually or jointly, infringed the '6,561 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '6,561 Patent. These broadband and/or packet-

based telephony products and/or services were capable of receiving and did receive telephone calls originating from a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 11 of the ‘6,561 Patent under 35 U.S.C. § 271(a).

97. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a communication system. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, Frontier, in a processing system, processed one of a Signaling System #7 (SS7) signaling message and a Q.931 signaling message for a call to select packet routing information for the call and transferred a control message indicating packet routing information. *See, e.g.*, ¶ 39-48, *supra*. On further information and belief, Frontier, in a communication system, received a user communication for the call and the control message, and in response, converted the user communication into a packet format including the packet routing information selected by the processing system and transferred the user communication in the packet format to a packet system that routed the user the packet routing information selected by the processing system. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

98. As a direct and proximate consequence of Frontier’s infringement of the ‘6,561 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 10: PATENT INFRINGEMENT
Infringement of the ‘454 Patent

99. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–97 above.

100. Upon information and belief, Frontier directly, either individually or jointly, infringed the '454 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '454 Patent. These broadband and/or packet-based telephony products and/or services were capable of placing and did place telephone calls that terminated on a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '454 Patent under 35 U.S.C. § 271(a).

101. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a telecommunication system. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier received a first signaling from customer premises equipment into a communication control processor. *See, e.g.*, ¶¶ 53-54, *supra*. On further information and belief, Frontier processed the first signaling in the communication control processor to select an address of a network element. *See, e.g.*, ¶¶ 53-55, *supra*. On further information and belief, Frontier transferred second signaling indicating the address from the communication control processor. *See, e.g.*, ¶¶ 59-60, *supra*. On further information and belief, Frontier transferred third signaling from the communication control processor to a narrowband network. *See, e.g.*, ¶¶ 59-60, *supra*. On further information and belief, Frontier received a voice communication from the customer premises equipment into a broadband network. *See, e.g.*, ¶ 60, *supra*. On further information and belief, Frontier transferred the voice communication in the broadband network to the network element. *See, e.g., id.* On further information and belief, Frontier transferred the voice communication from the network element to the narrowband network. *See, e.g., id.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

102. As a direct and proximate consequence of Frontier's infringement of the '454 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 11: PATENT INFRINGEMENT
Infringement of the '728 Patent

103. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–101 above.

104. Upon information and belief, Frontier directly, either individually or jointly, infringed the '728 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '728 Patent. These broadband and/or packet-based telephony products and/or services were capable of receiving and did receive telephone calls originating from a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '728 Patent under 35 U.S.C. § 271(a).

105. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a communication system. *See, e.g.*, ¶¶ 39-48, *supra*. On further information and belief, Frontier received telecommunication signaling for calls into a signaling processor, and responsively on a call-by-call basis, selected routing information based on the telecommunication signaling and transferred control messages indicating the routing information. *See, e.g.*, ¶¶ 39-42, *supra*. On further information and belief, Frontier received the control messages and user communications for the calls into a communication unit, and responsively on the call-by-call basis, converted the user communications from a first communication format into a second communication format having headers that included the

routing information selected by the signaling processor and transferred the user communications in the second communication format. *See, e.g.*, ¶¶ 41-48, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

106. As a direct and proximate consequence of Frontier's infringement of the '728 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 12: PATENT INFRINGEMENT
Infringement of the '534 Patent

107. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–105 above.

108. Upon information and belief, Frontier directly, either individually or jointly, infringed the '534 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringed the '534 Patent. These broadband and/or packet-based telephony products and/or services were capable of placing and did place telephone calls that terminated on a non-packet network, such as, for example, the PSTN, in a manner that directly infringed at least claim 1 of the '534 Patent under 35 U.S.C. § 271(a).

109. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implemented a method of operating a communication system. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier transferred a dial tone from a bearer interface for a caller. *See, e.g.*, ¶ 53, *supra*. On further information and belief, Frontier received Dual Tone Multi-Frequency (DTMF) signals from the caller into the bearer interface. *See, e.g.*, ¶¶ 53-54, *supra*. On further information and belief, Frontier processed the DTMF signals in the bearer interface to determine a called number.

See, e.g., ¶¶ 53-54, *supra*. On further information and belief, Frontier transferred a first message indicating the called number from the bearer interface to a processing system. *See, e.g., id.* On further information and belief, Frontier processed the called number in the processing system to select an identifier. *See, e.g.*, ¶¶ 54-59, *supra*. On further information and belief, Frontier transferred a second message indicating the identifier from the processing system to the bearer interface. *See, e.g., id.* On further information and belief, Frontier received the user communications into the bearer interface, and in response to the second message, converted the user communications into a packet format including the identifier and transferred the user communications in the packet format including the identifier to a communication network, wherein the communication network routed the user communications based on the identifier. *See, e.g.*, ¶¶ 60-61, *supra*. On further information and belief, each of these steps was performed by or on behalf of Frontier.

110. As a direct and proximate consequence of Frontier's infringement of the '534 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 13: PATENT INFRINGEMENT **Infringement of the '131 Patent**

111. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–109 above.

112. Upon information and belief, Frontier has been, and/or currently is, directly infringing, either individually or jointly, the '131 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringe the '131 Patent. These broadband and/or packet-based telephony products and/or services are capable of placing and do

place telephone calls that terminate on a non-packet network, such as, for example, the PSTN, in a manner that directly infringes at least claim 11 of the '131 Patent under 35 U.S.C. § 271(a).

113. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implements a method of operating a communication system to provide Public Switched Telephone Network (PSTN) access to a residential communication hub. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier, in the residential communication hub that is coupled to a packet network over a packet connection, exchanges telephony control signaling and telephony user communications in a PSTN format with an analog telephone, converts the telephony control signaling and the telephony user communications in the PSTN format to a packet format, exchanges the telephony control signaling in the packet format with a service node over the packet connection, wherein the service node comprises a call manager and a voice mux, exchanges the telephony user communications in the packet format with the service node over the packet connection, and exchanges Internet communications with the service node over the packet connection. *See, e.g.*, ¶¶ 53-61, *supra*. On further information and belief, Frontier, in the call manager that is coupled to the packet network, processes the telephony control signaling to select a PSTN connection of the PSTN, transfers a control message indicating the selected PSTN connection, converts the telephony control signaling between the packet format and the PSTN format, and exchanges the telephony control signaling in the PSTN format with the PSTN over a signaling interface of the PSTN. *See, e.g., id.* On further information and belief, Frontier, in the voice mux that is coupled to the packet network, receives the control message from the call manager, and in response, exchanges the telephony user communications in the packet format with the residential communication hub, converts the telephony user communications between the packet format and

the PSTN format, and exchanges the telephony user communications in the PSTN format over the selected PSTN connection. *See, e.g., id.* On further information and belief, each of these steps was, and continue to be, performed by or on behalf of Frontier.

114. As a direct and proximate consequence of Frontier's infringement of the '131 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 14: PATENT INFRINGEMENT
Infringement of the '918 Patent

115. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–113 above.

116. Upon information and belief, Frontier has been, and/or currently is, directly infringing, either individually or jointly, the '918 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringe the '918 Patent. These broadband and/or packet-based telephony products and/or services are capable of placing and do place telephone calls that terminate on a non-packet network, such as, for example, the PSTN, in a manner that directly infringes at least claim 11 of the '918 Patent under 35 U.S.C. § 271(a).

117. For example, on information and belief, Frontier (alone or in combination with its subsidiaries and/or third-party vendors acting under contract) implements a method of operating a communication system. *See, e.g., ¶¶ 39-61, supra.* On further information and belief, Frontier's control system, which includes control system data tables, receives and processes call routing data to fill the control data tables with the call routing data and also transfers the call routing data from the control system data tables to call processor data tables. *See, e.g., ¶¶ 39-40, supra.* On further information and belief, Frontier, in a call processor including the call processor data

tables, processes signaling information for a call based on the call routing data in the call processor data tables to transfer a control message for the call indicating a first connection and a second connection *See, e.g., id.* On further information and belief, Frontier, in an interworking unit, receives the control message, and in response to the control message, receives user communications in a first format from a first connection, converts the user communications to a second format, and transfers the user communications in the second format over the second connection. *See, e.g., ¶¶ 44-48, 60-61, supra.* On further information and belief, each of these steps was, and continues to be, performed by or on behalf of Frontier.

118. As a direct and proximate consequence of Frontier's infringement of the '918 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

COUNT 15: PATENT INFRINGEMENT
Infringement of the '463 Patent

119. Sprint realleges and incorporates by reference the allegations set forth in paragraphs 1–117 above.

120. Upon information and belief, Frontier has been, and/or currently is, directly infringing, either individually or jointly, the '463 Patent by making, using, selling, and offering for sale broadband and/or packet-based telephony products or services, including the Accused Products and Services, and other related telephony services, that infringe the '463 Patent. These broadband and/or packet-based telephony products and/or services are capable of placing and do place telephone calls that terminate on a non-packet network, such as, for example, the PSTN, through LNP querying in a manner that directly infringes at least claim 1 of the '463 Patent under 35 U.S.C. § 271(a).

121. For example, on information and belief, Frontier (alone or in combination with its

subsidiaries and/or third-party vendors acting under contract) implements a method of operating a call signaling processor for a call having a signaling message and a user communication. *See, e.g., ¶¶ 53-61, supra.* On further information and belief, Frontier received the signaling message for the call indicating a called number. *See, e.g., ¶¶ 53-55, supra.* On information and belief, Frontier processed the called number to transfer a number portability query. *See, e.g., ¶ 55, supra.* On further information and belief, Frontier received a number portability response indicating a route number. *See, e.g., ¶ 55, supra.* On further information and belief, Frontier processed the route number to select an identifier for routing the user communication. *See, e.g., ¶¶ 55-61, supra.* On further information and belief, Frontier transferred a control message indicating the user communication and the identifier to a communication system, wherein the communication system, in response to the control message, added the identifier to a header of the user communication and routed the user communication based on the identifier in the header. *See, e.g., ¶¶ 55-61, supra.* On further information and belief, each of these steps was performed by or on behalf of Frontier.

122. As a direct and proximate consequence of Frontier's infringement of the '463 Patent, Sprint has suffered damages in an amount not yet determined for which Sprint is entitled to relief.

PRAYER FOR RELIEF

Wherefore, Sprint requests entry of judgment in its favor and against Frontier as follows:

A. Judgment that Frontier has directly and/or indirectly infringed one or more claims of Sprint's Patents;

B. An award of damages to compensate Sprint for Frontier's infringement, including damages pursuant to 35 U.S.C. § 284, as well as prejudgment and post-judgment interest;

C. An award of costs and expenses in this action, including an award of Sprint's reasonable attorneys' fees pursuant to 35 U.S.C. § 285;

D. A permanent injunction restraining and enjoining Frontier, and its respective officers, agents, servants, employees, attorneys, and those persons in active concert or participation with Frontier who receive actual notice of the order by personal service or otherwise, from any further sales or use of their infringing products and/or services and any other infringement of the '131 Patent; and

E. A finding that this is an exceptional case, award treble damages due to Frontier's conduct, and order Frontier to pay Sprint's costs of suit and attorneys' fees; and

F. For such other and further relief as the Court may deem just, proper, and equitable under the circumstances.

DEMAND FOR JURY TRIAL

Sprint respectfully demands a trial by jury on all claims and issues so triable.

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